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ABSTRACT

The process, outcomes, and recommendations resulting from a project to develop a statewide nursing resource planning system are examined. Phase 1 of the project investigated nursing manpower demands for 1984 and 1986, while phase 2 studied the current scope of nursing practice. In addition to summarizing the findings of these investigations, methods of utilizing the resulting database are identified. The recommendations cover: future educational planning for nurses, professional practices of nurses, statewide organizational development of nursing resources, and future research. Outcomes included: (1) a planning/coordination network among the health care system, professional associations, regulatory agencies, and higher education agencies; (2) a nursing manpower demand and projections instrument specific to North Dakota and a computer program for analyzing nursing manpower requirements; (3) a nursing manpower supply model for the state based on nurse licensure data; (4) estimates of nursing manpower requirements for 1986; (5) a delineation of nursing practice that provides a base for curriculum development/revision and nursing staffing decisions; and (5) a rational planning approach for decision making regarding addition of new nurse education programs. (SW)

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NORTH DAKOTA

STATEWIDE NURSING STUDY

FINAL REPORT AND RECOMMENDATIONS

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PHASE III

NORTH DAKOTA STATEWIDE NURSING STUDY

PHASE III

****
FINAL REPORT AND RECOMMENDATIONS
****

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North Dakota Board of Nursing
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by

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Foreword

This final report summarizes the process, outcomes and recommendations resulting from a research project designed to develop a coordinated statewide nursing resource planning system. This research project has been administered under the guidance and funding of the North Dakota Board of Nursing. Findings of the various project studies have influenced decisions regarding nursing education and utilization of nurses in North Dakota.

Acknowledgement and appreciation are extended to the numerous individuals and organizations whose support and active involvement in the research project have made this study possible. Sharon Walker did all of the computer work under the direction and supervision of Dr. Smith. Appreciation is extended to each of the 741 survey respondents and specifically to:

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INTRODUCTION

The purpose of the Statewide Nursing Study is to provide information to the North Dakota Board of Nursing for decision-making and planning directed towards meeting the nursing needs of the citizens of North Dakota. The Board of Nursing has had numerous concerns during the past four years regarding nursing and its implications within the State of North Dakota. The Board's concerns include: 1) making decisions regarding the numbers and types of educational programs to prepare nurses 2) determining the scope of nursing practice in view of rapidly changing medical technology and 3) the basic question of preparation needed for practice. In order to address these concerns the Board determined that a systematic, state-wide, comprehensive study of nursing was needed.

The proliferation of nursing programs has been the greatest concern to the Board, particularily in light of the current controversy over the nursing shortage. Since the last study (Up-Date of the Need to Know-1976) four LPN programs have been initiated with one subsequently closing. Two additional LPN extension programs have been approved. The number of RN programs has remained the same, but one program has been granted an extension program. One RN program is also undergoing extensive study to determine the feasibility of becoming a baccalaureate program. A Master's program in Nursing has begun. A second college is conducting a feasibility study with a target date of 1984 for beginning the Master's program. There have

been other requests from four different institutions for information regarding initiating nursing programs in those agencies.

The Board's initial objective is to provide safe practitioners for the public and as such, needs information to make decisions regarding: 1) determination of current practice 2) determination of continuing competency for relicensure and 3) career mobility. The Board has received numerous requests from various agencies asking if nurses are permitted under law to do such things as insert intrathecal catheters, administer continuous intravenous narcotics, serve as "first scrub", or prescribe "over the counter" medications. What might be safe in a large hospital with a variety of personnel involved in decision-making, might simply not be feasible in a smaller institution. However, if the Board gives an opinion it cannot be geographical in nature. In conducting a comprehensive study, sufficient data should be generated to at least establish a baseline of practice.

The Board of Nursing committed financial resources in July, 1983 to complete the Statewide Nursing Study. Neil Clark, Ed.D. was hired by the Board to design and implement the study. David Smith, Ph.D. was hired by the Board to provide data analysis and interpretation. The study was designed to be completed in three phases. Phase I was designed to investigate nursing manpower demands

and resources. Phase II was designed to investigate the current scope of nursing practice. Phase III will provide the final report and recommendations for future planning.

Planning for nursing manpower and nursing education is best done by a body with official status in state government. The Board of Nursing is the logical organizational base for data gathering, decision-making, coordination and implementation of nursing resource planning. The Board is mandated to prepare safe practitioners for the residents of the state. It has the ability to integrate its plans with other statewide efforts in health and education. It has access to information which will permit a comprehensive view of the problems. It has adequate financial support and it has clear channels for submitting its recommendations. The Board of Nursing and its statewide advisory committee are a direct communication network with educational and health care administrators, and citizen leaders throughout the state.

OVERVIEW OF THE PROJECT

The objectives of this research project were developed to provide a data base that the Board of Nursing could utilize in decision-making regarding: 1) numbers and types of nursing education programs needed to prepare nurses 2) determination of current scope of practice 3) determination of continuing competency for relicensure and 4) enhancing career mobility. This research project was a first step towards establishing a continuous process of collecting data, disseminating information, and making decisions that can improve the quality of nursing care, increase organizational effectiveness and improve career mobility options for North Dakota nurses.

Research Objectives

The objectives of the Manpower Demands and Resources study (Phase I) are:

1) To determine the number and types of nurses needed in 1984 and 1986.

2) To compare anticipated nursing manpower supply with anticipated nursing manpower demands in 1984 and 1986.

3) To facilitate statewide nursing resource planning through continuous organizational development.

The objectives of the Delineation of Nursing Practice study (Phase II) are:

1) To investigate the current scope of nursing practice in North Dakota.

2) To investigate specific skills currently targeted by various nursing education resources within the state.

3) To investigate differences in specific skills endorsed by nurses with various education preparations as observed by nurses within the state.

4) To investigate employer's observations of minimum educational preparation required for safe performance of specific skills.

The objectives of the Final Report and Recommendations (Phase III) are:

1) To integrate the findings of the various studies included in the research project.

2) To identify methods of utilizing the data base obtained in the studies.

3) To provide recommendations for future educational planning for nurses.

4) To provide recommendations regarding professional practices of nurses.

5) To provide recommendations for statewide organizational development of nursing resources.

6) To provide recommendations for future research.

Research Design

The Organizational Development model for this research attempts to integrate the Manpower Demands and Resources data and the Delineation of Nursing Practice data for future planning. This data

is used in combination to facilitate: articulation of nursing education, improved job design and utilization of nurses and improved quality of working life for nurses. The current research project is the first step in a continuous process of research and development.

The Manpower Demands and Resources study was designed in a manner that is easily duplicated on a periodic basis. The research model was a matrix of selected nursing education levels, nursing roles and practice settings. Information gathered from nurse employers required a breakdown of future needs for nurses by education and role. The data was coded for practice setting type and geographic location and later pooled for regional and statewide analysis. Hospitals and nursing homes were coded for size because this variable can make a substantial difference in staffing needs and availability.

The Delineation of Nursing Practice study was also designed in a manner that is easily duplicated on a periodic basis. Educational preparation level of nurses provides the central organizing theme of the study. The research model was based on a sociotechnical systems theory of job design research. The research attempts to provide a technical analysis of nursing skills currently possessed by various nursing groups as defined by educational preparation. The research also attempts to gather information regarding "safe performance" of nursing skills, based on nurse

employer observations. The research also gathers information on nursing skills currently targeted within various nurse education programs within the state. The list of nursing skills resulting from a cluster analysis in the Kentucky Nursing Delineation Studies (1982) was used as the item pool for this study. This list of skills was not intended to be comprehensive, but was intended to be representative of nursing skills ranging from the most simple to the most complex. The list of skills had been previously analyzed and validated by a group of external consultants from: nursing administration, clinical nursing, nursing education, and nursing research. The information gathered from the three data sources (nurses, nurse employers, and nurse educators) was pooled to identify substantial incongruence between educators', nurses' and employers' observations of nursing skills.

Primary Outcomes

1) A planning/coordination network among institutions, professional associations, regulatory and higher education agencies representative of nursing and related components of the educational and health care system has been established. This statewide

advisory committee can address the problems and issues of nursing education and practice.

2) A nursing manpower demand and projections instrument specific to North Dakota has been developed. A computer program for analyzing nursing manpower requirements data has been developed that allows setting analysis, regional analysis and statewide analysis.

3) A nursing manpower supply model specific to North Dakota has been developed based on nurse licensure data. Modifications in existing Board computer programming can allow supply analysis on a regional basis, as well as, the statewide basis now available.

4) Nursing manpower requirements have been estimated for the year 1986.

5) An exploratory delineation study of nursing practice has been completed which provides a base for curriculum development/revision, nursing staffing decisions for current practice in the areas of education, clinical practice, research

and administration. The study analyzed a baseline of nursing skills varying in complexity of skill and knowledge requirements. The study shows that differentiation of nursing skills does occur in education programs. Nurse employers do differentiate safe performance utilization based on educational preparation. Nurses do differentiate scope of prac ice based on skill and knowledge complexity, especially for research and administration domains.

6) A need for a statewide articulated and coordinated approach to nursing education has been identified.

7) A rational planning approach for decision-making regarding additions of new nurse education programs has been established.

8) There is an increased awareness of a need for nurses to expand their roles into: research on nursing practices, self-peer regulation pertaining to scope of practice, professional association for improvement of economic status and career development, and continuing education or career mobility (advanced degrees).

9) There is an increased awareness of a need for health care system managers or decision-makers to maximize appropriate utilization of existing nursing resources. The groundwork has been laid for improving job designs for nurses. A need to examine compensation practices for nursing education preparation or job content has been documented. Applications of organizational development technology are needed to improve nursing productivity, job satisfaction and staff retention.

10) Future research suggestions have resulted from the efforts extended in this study.

ASSESSMENT OF MANPOWER DEMANDS AND RESOURCES

Purpose

An annual assessment of licensed nursing manpower in the state has been considered essential to long-term planning for many years. This annual assessment has provided a base from which to project probable future nursing manpower supply. It has provided a base for identifying trends in the nursing manpower pool. The assessment of nursing manpower demands and projections has been undertaken periodically. The assessment of demands/projections allows comparisons between projected supply and demands. These comparisons provide a data base for rational planning regarding the numbers and types of nurses estimated to be needed within the state.

Process

The assessment of the numbers and types of nurses needed within the state requires a close examination of the educational preparations needed, projected role functions, practice setting differences, regional differences and statewide trends. The computer program developed in this study permitted examination of combinations of variables resulting in composite summaries of data obtained from varying perspectives. Nurse graduation data, net attrition rates and licensure data permitted the calculations for nursing manpower supply

projections. Nursing demands were estimated by nursing supervisors for nine practice settings. The data were then analyzed for eight planning regions in the state. The data were then pooled for statewide analysis. The nursing demand projections and nursing resource calculations were compared to determine predicted shortages or surpluses.

Findings

Findings of the study estimate a statewide shortage of 30 LPN nurses and 263 RN nurses for 1984. The RN nurse shortage includes:

1. 82 AD nurses
2. 128 D nurses
3. 32 BS nurses
4. 18 MS nurses
5. 3 PhD nurses

Findings of the study estimate a statewide surplus of 61 LPN nurses and a shortage of 124 RN nurses for 1986. The RN nurse shortage includes:

1. a surplus of 29 AD nurses
2. a shortage of 189 D nurses
3. a surplus of 81 BS nurses
4. a shortage of 41 MS nurses
5. a shortage of 4 PhD nurses

Statewide Vacancies Prioritized by Estimated Total Number:

1. 88 D Nurses
2. 85 BS Nurses
3. 76 LPN Nurses
4. 36 AD Nurses
5. 18 MS Nurses
6. 7 PhD Nurses

Statewide Demand Projections Prioritized by Number Needed in 1984:

1. 193 BS Nurses
2. 150 LPN Nurses
3. 119 D Nurses
4. 63 AD Nurses
5. 27 MS Nurses
6. 4 PhD Nurses

Statewide Demand Projections Prioritized by Number Needed in 1986:

1. 376 BS Nurses
2. 203 LPN Nurses
3. 157 D Nurses
4. 71 MS Nurses
5. 55 AD Nurses
6. 9 PhD Nurses

Licensed Practical Nurses

There are currently 76 estimated vacancies for LPN nurses in the state. The majority of LPN vacancies exist in small and large hospitals in regions 3, 4 and 5.. There are 150 new LPN positions projected for 1984. Most of these new positions were for hospitals (small and large) and small nursing homes within regions 1, 3, 4, 5 and 6. There are 203 new LPN positions projected for 1986. Most of these new positions were for clinics, hospitals (small & large), and small nursing homes within regions 4 and 6.

Associate Degree Nurses

There are currently 36 estimated vacancies for AD nurses in the state. The majority of AD vacancies exist in small hospitals and within regions 2, 3, 4, 5, and 8. There are 63 new AD positions projected for 1984. Most of these positions were for small and large hospitals within regions 4 and 5. There are 55 new AD positions projected for 1986. Most of these positions are within hospitals (small & large) and nursing homes (small & large) in regions 4 and 5.

Diploma Nurses

There are currently 88 estimated vacancies for D nurses in the state. The majority of D vacancies exist in small hospitals and

large nursing homes in regions 1, 3, 5 and 7. There are 119 new D positions projected for 1984. Most of these positions are for small hospitals and nursing homes within regions 2, 3 and 5. There are 157 new D positions projected for 1986. Most of these positions are for small hospitals and small nursing homes within regions 2, 3, 4, 5, and 6.

Baccalaureate Nurses

There are currently 85 estimated vacancies for BS nurses in the state. The majority of BS vacancies exist in educational programs and hospitals (small and large) within regions 4, 5, 6 and 7. There are 193 new BS positions projected for 1984. Most of these positions are for small and large hospitals within regions 4 and 5. There are 376 new BS positions projected for 1986. Most of these positions are for small and large hospitals in region 4.

Masters Nurses

There are currently 18 estimated vacancies for MS nurses in the state. The majority of MS vacancies exist in educational programs in regions 1, 4, and 5. There are 27 new MS positions projected for 1984. Most of these positions are within large hospitals and educational programs in regions 4, 5, 6 and 7. There are 71 new MS positions projected for 1986. Most of these positions are for large

hospitals and educational programs in regions 2, 4, 5, 6 and 7.

Doctoral Nurses

There are currently 7 vacancies estimated for PhD nurses in the state. The majority of PhD vacancies exist in educational programs and large hospitals in regions 1 and 4. There are 4 new PhD positions projected for 1984. Most of these positions are for educational programs in region 7. There are 9 new PhD positions projected for 1986. Most of these positions are for educational programs in region 7.

DELINEATION OF NURSING PRACTICE

Purpose

As nursing practice becomes more complex, specialized and diversified, the importance of clear and mutual understanding of nursing competencies among nurse educators, nurse employers and practicing nurses becomes paramount. The purpose of the delineation study is to explore, define and plan for the education and utilization of different categories of nursing personnel essential to the delivery of quality nursing care in an expanding health system. This research is a preliminary analysis of the nursing profession in North Dakota.

Process

The Nursing Delineation Survey was sent to 14 Nurse Educators, 196 Nurse Employers and 735 Nurses. A substantial return rate was obtained in all three groups and the data was considered valid and representative of the groups sampled or censused. The Nurses' data (excluding biographic data) was then grouped into two classifications: 1) possess the skill and 2) doesn't possess the skill. Frequencies and percentages were then obtained for each of the five education levels investigated. The 252 skill items were then grouped according to the skill/knowledge complexity ranks predetermined by the cluster analysis results in the Kentucky Nursing

Delineation Study (1982). The mean number of skill items obtaining yes responses within each cluster level were calculated for each education level investigated. A few selected skill items within each education level were analyzed by frequency of performance, setting type and years of work experience.

The Nurse Educators' data (excluding biographic data) was grouped into two classifications: 1) program graduates possess the skill and 2) program graduates don't possess the skill. Frequencies and percentages were then obtained for each of the five education program levels investigated. The 252 skill items were then grouped according to the skill/knowledge complexity ranks (as indicated above) and the mean number of skill items obtaining yes responses within each cluster level were calculated for each education program investigated.

The Nurse Employers' data (excluding biographic data) was grouped into five classifications according to the minimum educational preparation required for safe performance of a particular skill. The five classifications are: LPN, AD, D, BS, and MS/PhD. The mean number of items for which a given educational classification was observed as "minimum preparation required" was then calculated for each cluster level according to the skill/knowledge complexity ranks (as indicated above).

The results from the three surveys were then analyzed to identify substantial incongruence between educators', nurses' and employers' observations of nursing skills.

Findings

The results of the delineation study provide a data base for: 1) curriculum development and articulation 2) educational planning, 3) improved nurse utilization, 4) improved job descriptions, and 5) improved quality of nursing practice. The results of the delineation study provide an exploratory analysis of the nursing profession in North Dakota. Significant trends in the data were observed relative to the varying degrees of skill/knowledge complexity. As the complexity of the nursing skills examined increased:

1) Nurse educators in more advanced education programs were more likely to target the skill as an educational objective.

2) Nurse employers were more likely to utilize nurses with advanced education degrees for safe performance of the skill.

3) Nurses were more likely to differentiate the skill as congruent with BS or Graduate nursing practice. The differentiation was most substantial for Cluster 3 skills. Cluster 2 skills showed moderate differentiation at Level I and substantial differentiation at Level II and III. Very little differentiation occured for Cluster 1 nursing skills. See Appendix A (Glossary) for descriptions of skills contained in Clusters 1, 2, and 3.

Educational aspirations of North Dakota nurses and employers (nurse supervisors) were high. This finding suggests high levels of untapped potential within the state's existing nurse work groups. This result indicates significant potential for job enlargement, job enrichment and career development (mobility) efforts for North Dakota nurses. A majority of employers, educators and nurses surveyed were in favor of using educational preparation as a component of salary determination in addition to satisfactory performance and experience.

Observations across educators, employers and nurses suggest the following conclusions:

1) LPN educational preparation appeared to be most appropriate for Cluster 1 (Level I and II) nursing skills. These skills

involve technical nursing and basic clinical implementation and planning. The initiation of these tasks is often delegated by another person.

2) AD, D and BS education preparations appeared to be appropriate for Cluster 1 (Levels III and IV) nursing skills. The complexity of clinical skills is greater than level I and II and more independent decision-making is required.

3) BS or Graduate education preparations appeared to be most appropriate for Cluster 2 (Levels I, II, and III) nursing skills. The complexity of clinical skills is greater than Cluster 1 and professional development and regulation, administration and research are involved at this level.

4) Graduate educational preparation appeared to be most appropriate for Cluster 3 nursing skills. Evaluation of administration, clinical and education domains is involved.

Triangulation comparisons of nursing skills across educators, employers and nurses appeared to be a useful methodology for:

1) Identifying substantial incongruence between educators', nurses' and employers' observations of nursing skills.

2) Special task forces can use the triangulation data base to assist with decision-making regarding: 1) the appropriate knowledge base for a given skill 2) inclusion or exclusion of specific skills in nurses' scope of practice and 3) improved utilization of nursing resources and job design.

In summary, LPN nurses were well prepared in basic clinical care, but they appear to be underutilized in this capacity by employers. Employers are seeking to utilize BS nurses for management and administrative skills, but many BS nurses do not feel they possess these skills. Employers do differentiate between educational preparation levels for safe performance of nursing skills of varying complexity. However, many employers do not currently apply salary differentials between educational preparation levels. Some inappropriate utilization of nursing resources exist for all the educational preparations examined in this study.

RECOMMENDATIONS

Educational Planning

1. A predicted surplus of 61 LPN nurses in 1986 indicates that a moratorium should be placed on the addition or expansion of LPN education programs through 1986. LPN education prepares one adequately for basic clinical nursing, but this education preparation affords the employer the least flexibility in safe performance of more complex nursing skills. This nurse category finds its "best fit" with job designs that involve more basic clinical nursing skills. The higher turnover rates within this nurse category support previous research findings showing correlations between years of educational investment and turnover rates.

2. A predicted surplus of 29 AD nurses in 1986 indicates that a moratorium should be placed on the addition or expansion of AD education programs through 1986. AD education prepares one adequately for clinical nursing and it affords employers

more flexibility for safe performance of more complex nursing skills than LPN Nurses. This nurse category shows lower turnover rates than LPN nurses.

3. A predicted shortage of 189 D nurses in 1986 results primarily from the higher attrition rate for this nurse category. About 157 new D positions were projected for 1986. Large hospitals have traditionally been the largest employer of D nurses and they expect to add very few (27) D Nurses in 1986. This nurse category affords more flexibility in utilization for safe performance of more complex clinical nursing skills than either LPN or AD groups. However, Diploma programs typically don't include administration, research or education skill domains. Further investigation of the rapidly changing employment trends is needed before recommendations can be made.

4. A predicted surplus of 81 BS nurses in 1986 results from the lower attrition rate for this nurse category. About 376 new positions were projected for BS nurses for 1986. This group affords even more flexibility to employers for safe

performance of more complex nursing skills. This nurse category shows the most flexibility for administrative, research and education nursing skills. A moratorium should be placed on the addition or expansion of BS education programs since it appears that an adequate supply will exist to meet the projected demand. If any programs diminish in number, BS programs should be expanded.

5. There is a predicted shortage of 41 MS nurses for 1986. The recent opening of two MS programs within the state appears to be timely. This group affords the employer the most flexibility for safe performance of more complex nursing skills. The leadership positions in administration, research and education can best be met with MS nursing resources. Further investigation of MS program graduates and MS employment trends is needed before recommendations can be made.

6. There is a predicted shortage of 4 PhD nurses for 1986. About 9 new positions for PhD nurses were projected for 1986. This group of nurses affords the employer maximum flexibility and leadership potential available in nursing

resources. No consideration for developing a PhD nursing program within the state appears warranted at this time.

7. A system of articulated education would enhance career mobility for many North Dakota nurses. The motivation to participate in career advancement appears to be high in nurses and nursing supervisors. Articulation should involve transferability of coursework. All nursing education programs should include coursework that allows for direct transfer of credits into more advanced nursing education programs. Articulation would likely result in the following outcomes: improved retention of existing nursing resources, enhanced flexibility in employer utilization for safe performance of complex nursing skills, improved quality of nursing services, increased numbers attracted to the profession, and an improved professional image.

The articulation policies of all nursing programs should be developed cooperatively and placed in writing for review by nurses interested in career advancement.

8. Educators need to examine skills researched in the Delineation Studies. The Knowledge Classification System available in the Kentucky Delineation Reports can provide assistance in determining curriculum content associated with various levels of nursing skill-knowledge complexity. Most importantly, educators can evaluate the way employers view utilization of program graduate. Educators can also determine the inclusion or exclusion of various nursing skills as learning objectives. The gap between what a graduate learns in the educational program and what is required on the job can be narrowed by using this methodology. Volume II of the Kentucky Delineation Studies is available through the North Dakota Board of Nursing.

9. Continuing education should be an aspect of continuing professional development for North Dakota nurses. Every profession recognizes a need for lifelong learning because of the information explosion in nearly every field. This study has asked nurses to identify skills they feel should be examined in future research. It is likely that many of these skills would be welcome in continuing

education programs. Professional associations should coordinate and plan continuing education opportunities within the state and reward nurses who participate. The employers of nurses should share the responsibility for making continuing education units available within their organization. With telecommunications and video courses available, distance and cost factors for continuing education are minimized.

Professional Practices

1. At some point in time, the practice of nursing must be performed at a level consistent with the amount of educational preparation. Nurses who practiced at a level beyond their preparation would risk losing their licensure. In short, nurses would "self-determine" their ethical scope of practice. Peer accountability could also assist with regulating professional practices. Employers could not ask nurses to perform skills beyond their scope of practice without "risk" or "responsibility". The professional associations would support nurses who have conflicts with employers regarding scope of practice and ethical standards. Nurses should

require employers to utilize their skills in more appropriate ways.

2. Nurses should require specificity in written job descriptions. They should require written documentation regarding the organization's nursing philosophy. By requesting this written framework of nursing practice they can determine if their scope of practice "fits" the position and the organization. These written guidelines become the foundation for ethical standards and practices.

3. Nurses should express in writing the skills they possess that are currently not being utilized by their employers. If nurses are required to perform skills that go beyond their scope of practice, they should express the problem in writing to their employer and ask the Board of Nursing for a written opinion regarding the matter. The above mechanisms provide the groundwork for establishing autonomy and feedback regarding professional practices.

4. Nurses should organize independent research teams that pursue grants and/or organization revenues for research projects designed to develop professional practices. This research can be used to establish the profession of nursing as an autonomous provider of health care services.

5. Nurses should expect that nurse managers and/or supervisors have more advanced nursing education than subordinates. The delineation data clearly indicates that BS and MS nurses receive training that targets the administrative and research skills that are necessary for leadership and organization change.

6. Nurses need to participate in a cohesive professional association that advocates for economic and career advancement as well as client advocacy and public relations.

7. Nurses should participate in continuing education opportunities to expand their knowledge base and skills and to affirm their professional status.

8. Nurses should identify organizational policies that interfere with effective nursing practice.

9. Nurses should prepare and negotiate a career plan that outlines professional goals regarding: a) continuing education (time & financial) b) salary increases contingent upon career advancement c) participation in policy making related to patient care d) participation in policy making related to personnel benefits and working conditions and e) achievement recognition comparable to those of other health professionals.

Organization Development

1. Mechanisms in organizations should be developed to allow nurses to provide more input into job design and management policies.

2. Employers should analyze their nursing resources more carefully in order to maximize their utilization of existing nursing skills.

3. Organizations should examine ways of improving nursing job designs for organizational payoffs like increased work effectiveness, increased job satisfaction and lower absenteeism and turnover. Research can be used to document results or lack thereof.

4. Organizations should express their career development policies in writing, so that nurses can negotiate a career path that suits their need for professional growth. Managers should facilitate individual career development plans for their nurse employees.

5. Organizations should establish an accounting system wherein costs for nursing services are itemized and salaries are based on an equitable fee for service basis. Each skill in the delineation study was defined as an "independent unit of work" capable of being consumed by another and cost-accounted. The amount of income generated by various nursing services should also be determined.

7. Organizations need to create more nursing research positions to determine more effective ways of managing and utilizing nursing resources.

8. Job descriptions need to be specifically formulated in writing so that nurses can determine if they are being utilized in maximum or appropriate ways.

9. Organizations need to differentiate compensation commensurate with complexity of contribution and responsibility. The delineation studies clearly demonstrate that nurses vary significantly in their skill-knowledge base. An incentive system has to be developed that will foster professional growth and mastery of more complex nursing skills. Failure to establish reasonable incentives will result in lack of adequate staff or increased liability due to errors and nursing malpractice.

10. Organizations need to improve the fit between nurses' psychological needs, nursing skills and knowledge, job design and system context. Organization development methodology and research should be applied on a continual basis.

Future Actions

1. A special task force should be designated to gather data on the feasibility of formulating a statewide system of articulated nursing education. A written plan should show the coordinated agreements between and among the individual nursing education programs. Nursing education should develop a statewide plan to provide for advanced standing to minimize loss of time and credit.

2. A task force should be designated to develop specific definitions of scope of practice for various education groups and practice roles.

3. A task force should be designated to facilitate improved nurse utilization in North Dakota health organizations.

4. A task force should be designated to support recruitment of Graduate level nurses to assume leadership roles in education, administration and research.

5. A task force should be designated to coordinate nursing research efforts on a statewide basis.

Future Research

1. Research should be completed to determine the following:

   a) The efficiency of career mobility within the state.

   b) The degree of cooperation and coordination between and among the nursing education institutions in the state.

   c) The geographic distribution of nurses relative to nursing service delivery and need.

2. The existing data base can be utilized to explore other research questions of interest:

   a) A clustering of items into education, clinical, research and administration domains could be analyzed to examine differences between education groups.

3. Research should be conducted investigating skills not examined in this study. The nursing skills provided by survey respondents are fertile ground for studying adaptive skills needed in nursing now or in the future.

4. Research on the feasibility of nursing job design and job enrichment is needed in a variety of employment settings.

5. Research on the organizational outcomes of job design efforts and job enrichment efforts are needed to determine if they have produced the desired results.

6. Research on work effectiveness, job satisfactions, work motivations, absenteeism and turnover are needed to establish baseline data for improving nursing work systems.

7. Research on the "part-time nurse" phenomena seems warranted. Is the preference for part-time employment determined by nurses or organizations?

8. Research on the feasibility of awarding nursing scholarships with regional or setting contingencies seems warranted.

9. Research on the causes of out-migration of LPN, AD and D nurses may be appropriate.

APPENDIX A

GLOSSARY OF TERMS

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Articulated Nursing Education. A sequence of academic advancement planned between nursing programs to increase educational and career mobility without duplication of previous learning experience.

Associate Degree Nurse (AD). The AD nurse has completed a collegiate nursing program which is two academic to two calendar years in length and has an Associate Degree with a major in nursing.

Baccalaureate Degree Nurse (BS). The BS nurse has completed a collegiate nursing program which is four academic years in length and has a BS Degree with a major in nursing.

Budgeted Positions. Those budgeted positions currently filled, vacant or projected for nursing staff.

Career Development Practices. Refers to a health care agency's system for promotion of nurses to recognize and reward individuals for education, experience and performance in nursing practice. Career development practices may be differentiated by roles, functions, educational degrees and/or performance criteria.

Career Mobility. The ability to provide plans for upward movement, expanded roles, expanded competencies, expanded education, expanded responsibility and reward within the same field.

Clinical Specialist. A Registered Nurse with a Masters Degree in nursing who is prepared in a defined specialty area of nursing.

Cluster 1 Nursing Skills. Cluster 1 items include the following types of nursing skills: Level I: technical nursing skills; Level II: clinical implementation, clinical planning, clinical assessment, client teaching; Level III: clinical implementation and assessment, educational planning, education program maintenance, research planning, decision-making, policy-making, and communication; Level IV: Clinical planning, educational course development, counseling, and job descriptions. Cluster 1 has 154 nursing skill items of increasing complexity.

Cluster 2 Nursing Skills. Cluster 2 items include the following types of nursing skills: Level I, professional development planning and implementation, clinical assessment, planning and implementation, human rights protection, research planning, and administrative planning; Level II, professional regulation, clinical assessment and maintenance, crisis management, education planning and evaluation, administrative assessment and organization, research planning, implementation, and dissemination; Level III, Education (philosophy, curriculum development, evaluation, coordination), administration, research planning and analysis, clinical planning and management. Cluster 2 has 85 nursing skill items of increasing complexity.

Cluster 3 Nursing Skills. Cluster 3 items include the following types of nursing skills: Evaluation (Education, Service, Administration, Reporting). Cluster 3 has 14 nursing skill items.

Competency. The possession of a definitive skill. The capacity to perform a specific skill. Skill, competency and task are interchangeable terms in this study. Tasks are smaller subdivisions of jobs consisting of "work units" or elements which can be moved independently from one job to another. In priniciple, someone other than the performer must potentially be able to use or consume the task (skill) output.

Community Health Nursing. Refers to the application of prevention, health promotion and maintenance services to populations of individuals and groups within their own environment of home, school, or work place.

Diploma Nurse (D). The D nurse has completed a hospital based nursing program which is two calendar to three calendar years in length and has a diploma from the School of Nursing.

Doctorate Nurse (PhD). The doctoral degree nurse has completed a collegiate graduate program which is three to five academic years in length and has a doctoral degree with a major focus in nursing.

General Staff. Licensed Practical Nurses and Registered Nurses who provide nursing care to patients/clients.

Intergroup Relations. Organizational Development (OD) strategies that focus on the interfaces of different work groups. In this study interfaces occur between different educational levels of nurses, employers and educators of nurses, nurses and employers of nurses, and nurses and educators of nurses. OD strategies often focus on the management and resolution of intergroup conflicts and the removal of disagreement.

Job Design/Enlargement. OD strategies that focus upon the technical aspects of the job (task design, assignments making up jobs) and the social structures that support it. Job design and enlargement attempt to increase satisfaction and performance by building in greater variety, discretion (autonomy), feedback, identity, and responsibility for whole task completion (Friedlander & Brown, 1974).

Job Enrichment. OD strategies that focus on restructuring the content of a set of jobs or functions. Job enrichment attempts to enhance the achievement, challenge, and growth dimensions of jobs by collapsing various job functions into a single more responsible function (Friedlander & Brown, 1974).

Licensed Practical Nurse (LPN). The LPN nurse has completed a Practical Nurse program which is one academic to one calendar year in length.

Masters Nurse (MS). The MS nurse has completed a collegiate graduate program which is one to two academic years in length and has an MS degree with a major in nursing.

Net Attrition. Net attrition is a rate which measures the effect of various factors on in- and out-migration of nurses in the work force. The formula for net attrition rate is:

$$NAt = \frac{(St + 1) - (St + Gt)}{St}$$

Where: NAt = Net attrition rate for year t
St = Current work force in year t
St + 1 = Available work force in year t + 1
Gt = Graduations in year t

Nurse Administrator. A Registered Nurse who is responsible for the management of an agency's nursing services.

Nurse Anesthetist. A Registered Nurse who is engaged in the practice of administering anesthetics.

Nurse Consultant. A Registered Nurse who provides professional advice or a specialty service for a fee.

Nurse Practitioner. A Registered Nurse with the advanced specialized nursing education necessary to provide primary health care and/or advanced nursing care.

Nurse Supervisor. A Nurse who is responsible for the management of a unit that provides nursing care.

Nursing Instructor. A Registered Nurse who teaches the practice of nursing in an educational program.

Nursing Shortage. The situation where employers of nurses in a given area cannot find the numbers and/or types of nurses they seek to employ for specific functions and shifts for the salaries, fringe benefits and working conditions they are prepared to offer.

Organizational Development. OD is a coherent, systematically planned, sustained effort at system self-study and improvement. The goals of OD include improving both the quality of working life for the individual as well as the organizational functioning and productivity with a direct or indirect focus on educational issues. OD has been applied in government agencies, public schools, higher education, health care systems and business/industrial settings.

Synthesize. Synthesize refers to bringing together various elements into a whole. To form by bringing together various elements.

Task. A task is defined so that it can identify a unit of work. The task is conceptually smaller than the job as a whole. The task can be a part of a series of work activities which are steps leading to the production of final products or services. Tasks are smaller subdivisions of jobs consisting of "work units" or elements which can be moved independently from one job to another. In priniciple, someone other than the performer must potentially be able to use or consume the task (skill) output.

Triangulation. Refers to combining data from three sources into a common data set for analysis and planning. This offers the potential to increase efficiency through consolidation, coordination and feedback of data to organizational planners. Where there is consensus or agreement among two of the data sources the effort is then extended to resolve identified differences with the third data source.

Research Consultant. A Registered Nurse who provides professional advice in the specialty service of research or one who seeks to find scientific answers to perplexing problems.

Turnover. The turnover rate for nurses can be calculated by using the following formula:

$$\text{Average Turnover Rate} = \frac{\text{Number of Employees Terminating}}{\text{Total Number of Employees}}$$

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